

QCX  
Avro  
CF105  
R-7-0400-34  
Iss-8

FILE IN VAULT

C-105 MK 2 Report # 7-0400-34  
Production A/C Issue 8 16  
WEIGHT SUMMARY & C.C. POSITION  
N.A.A. ~~SECRET~~ June 1/57  
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Report no.: QCX - AVRO - CF105- R-7-0400-34-Iss. 8

has been  downgraded to : \_\_\_\_\_

de-classified

by (Name): Michel W. Drapeau

(Dept.): A/DND Coordinator, Access to Information

Date: Dec. 7, 1992

R. Auger  
Signature

Date: June 1st, 1957  
Aircraft: C-105 MK. 2

Report # 7-0400-34 Iss. 8  
Prepared By: K. Griffin  
Checked By: E. Burnett

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Classification cancelled / changed to: UNCLASSIFIED  
By authority of: DRDA 7/DARFT 5-8/DAS Eng 6-4-5  
Date: 5 Nov 1992  
Signature: B. Aubrey  
Unit / Rank / Appointment: DSIS 3, Secretary CRAD HQ DRP

I N D E X

<u>Sheet #</u>	<u>Content</u>
1-1 to 1-4	Introductory notes and brief explanation of Weight Changes to the Aircraft.
2-1 to 2-4	Detailed explanation of Weight Changes to weight reports as listed on I.B.M. Sheets.
3-1 to 3-2	Weight and C.G. Summaries.
4-1	Horizontal C.G. Envelope for Aircraft Flight Conditions using fuel sequencing, C.G. controlled to approximately 31% M.A.C. until Damping System requirements proven. (ref. Avro Spec. E-503).
4-2	Horizontal C.G. Envelope for Aircraft Flight Conditions using fuel sequencing to achieve approximately 34% M.A.C. at Combat Weight (Alternate sequencing Spec. E-503).
5-1 to 5-15	I.B.M. Detail Sheets of Weight's and C.G.'s .



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47178

Date: June 1st, 1957  
Aircraft: C-105 MK 2  
Production A/C

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Report # 7-0400-34 Iss. 8  
Sheet # 1-1  
Prepared By: K. Griffin  
Checked By: E. Burnett

### INTRODUCTION

The following is a Weight & C.G. Summary of the C-105 MK 2 Production Aircraft. Of necessity some figures quoted herein are only of a very preliminary nature, due to lack of information e.g. Fuselage aft of Sta. 803, Air-Conditioning system etc, extensive redesign from MK 1 is in progress.

Weight estimates have been made, based on the MK 1 Aircraft with relevant changes made to MK 2 scheme and production drawings. Where no details regarding minor changes are yet available, allowances have been retained as in the MK 1 Aircraft.

All Weight & C.G. changes are relative to Issue 7 of May 1st, 1957.

### GENERAL

- a) Orenda PS 13 Engines comprise the Power Plant (4,500 lb each).
- b) A package containing 4 "semi-submerged" Sparrow II Missiles (432 lb each) forms the current armament.
- c) The R.C.A. Radar Astra I System is installed - Weight & C.G. location being to the latest breakdown received from them, dated January 11th, 1957. However, the Sparrow III Auxiliaries and the Infra-red Tracker system, included in the breakdown, have been deleted and some Avro installed antennae added (Total Weight 2,614.5 lb)
- d) A considerable number of MK 1 parts and assemblies have now been weighed. There have only been very insignificant weight deviations between calculated and actual weights of Structural items, however, bought out equipment has been fairly consistantly in the order of 11% above the manufacturers estimates or Avro specification weight requirements. Where these weights apply to the MK 2 Aircraft, they have been incorporated into the MK 2 Aircraft weight records.

On the I.B.M. sheets in this report, immediately preceeding the item title, will be found a number varying from 0 to 100. This is the percentage actual weight recorded in that particular report.

N.B. It should be noted that the first MK 2 Aircraft will probably not be as this summary designates, but will be a Flight Test version with instrumentation replacing the Missile Package etc.

### 1. STRUCTURE

	<u>WEIGHT (lb)</u>
a) Inner Wing - addition of bumper pads	+ 5
Miscellaneous re-estimates, actual weights of MK 1 parts etc. etc.	+ 5
	<hr/>
Weight Change Increase Ref. 2-1	+ 10
b) <u>Fin and Rudder</u>	
Rudder - Actual weight of MK 1 Rudder	+ 3
	<hr/>
Weight Change Increase Ref. 2-1	+ 3

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Sheet # 1-2  
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Checked By: E. Burnett

INTRODUCTION

1. STRUCTURE

WEIGHT (lb)

c) Fuselage Fwd. Sta. 255"

Top Longerons - machined packers Al. replaces Mg.	+	4
Windscreen - actual weight of casting (MK 1 A/C)	+	2
Pilot's Canopy - actual weight of casting and glass (MK 1 A/C)	+	4
Navigator's Canopy - actual weight of casting, window frame and glass (MK 1 A/C)	+	5
Weight Change Increase	+	15
Ref. 2-1		

d) Centre Fuselage Sta. 255"-485"

No Weight Change

e) Duct Bay Sta. 485"-591.65"

No Weight Change

The Floating Duct is being extensively redesigned with an articulated adaptor between floating duct and Engine, to include gills. No drawings are yet released and it is felt that the weight currently recorded together with the adaptor ring (made obsolete by above, but still recorded for weight purposes) will be adequate. A revised estimate will be made at the earliest opportunity.

f) Engine Bay Sta. 591.65"-742.5"

Engine Rails - estimated to production drawings	+	1
Engine Doors # 1 & 2 - first estimate to scheme drawings	-	11
Weight Change Decrease	-	10
Ref. 2-2		

g) Rear Fuselage Sta. 742.5" Aft.

Engine Access Doors - web gauges etc. included in some frames	+	5
Weight Change Increase	+	5
Ref. 2-2		

There is no definite scheme yet for Tailcones and Stringer structure. The weight currently recorded is as for MK 1 in Titanium, allowances having been made for the increased length of the Tailcone, but no other account taken of lines changing or design alterations.

h) Fuselage Joints

No Weight Changes

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TOTAL STRUCTURAL INCREASE

+ 23

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Sheet # 1-3  
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INTRODUCTION

	<u>WEIGHT (lb)</u>
2. <u>LANDING GEAR</u>	
No Weight Change	
3. <u>POWER PLANT &amp; SERVICES</u>	
Engine Mounts & Accessories - some production drawing estimates, early allowances tended to be too high	- 8
Fuel System - first complete estimate of the redesigned system without proportioners	- 64
<u>TOTAL POWER PLANT &amp; SERVICES DECREASE</u>	<u>- 72</u>
<u>Ref. 2-2</u>	
4. <u>FLYING CONTROLS</u>	
Mechanical Controls - design O/B Aileron Control Rod etc.	+ 4
Hydraulic Controls - miscellaneous design changes	+ 4
<u>TOTAL FLYING CONTROL INCREASE</u>	<u>+ 8</u>
<u>Ref. 2-2</u>	
5. <u>EQUIPMENT GROUP</u>	
Windscreen De-misting - increase in transformer & panel E 40 controls etc. for Navigator's window de-misting	+ 12
Ejector Seats - redesign of Martin Baker 80 ft/sec. ejection seat - manufacturer's weight	+ 6
Oxygen System - miscellaneous redesign piping etc.	+ 76
Low Pressure - piping for waveguide compressor, hydraulic system and armament pack inflatable seal added	+ 2
Utility Hydraulics - 200 cu. ins. accumulator replaces 80 cu ins.	+ 6
Missile Pack Structure & mechanisms - estimates generally revised to current data, for fuller information see 'weight changes' section, briefly:-	+ 12
Structure - increased by	+ 45
Telescopic Links	- 27
Launcher Stops deleted	- 35
Drag Links, attachments etc.	- 3
Missile Pack Hydraulics - addition 40 G.P.M filter	+ 12
Vendors weights of jacks & valves	- 30
<u>TOTAL EQUIPMENT INCREASE</u>	<u>+ 76</u>
<u>Ref. 3-4</u>	
6. <u>OPERATIONAL LOAD</u>	
Water - Trapped in Air Conditioning System - no allowance previously +	15
<u>TOTAL OPERATIONAL LOAD INCREASE</u>	<u>+ 15</u>
<u>Ref. 2-4</u>	

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Sheet # 1-4  
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Checked By: E. Burnett

INTRODUCTION

SUMMARY

Weight Change - Aircraft Basic Weight

Structure	+	23 lb.
Power Plant	-	72 lb.
Flying Controls	+	8 lb.
Equipment	+	76 lb.
	+	<u>35 lb.</u>

Weight Change - Operational Load less Fuel

Water Trapped	+	15 lb.
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Weight Change - Operational Weight Empty (A/C less Fuel)

<u>Issue 7</u>	<u>Issue 8</u>	
<u>44,165 lb</u>	<u>44,215 lb</u>	= <u>+ 50 lb.</u>

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Sheet # 2-1  
Prepared By: K. Griffin  
Checked By: E. Burnett

DETAILED WEIGHT CHANGES TO I.B.M.  
TABULATED DETAILS OF May 1st, 1957.

WEIGHT CHANGES

WEIGHT (lb)

Wing:

- 3.93	A/C Centre Line Joints - revisions in accordance with MK 1 Actual weights of parts etc. Machined rib included in Structure F/S to M/S	+ 2.09
		- 6.02
		- 3.93
+ 17.33	Structure F/S to M/S - Addition of bumper pads C/L rib now included here (see above) Actual weights of MK 1 Skin Panels Miscellaneous minor changes	+ 5.48
		+ 6.02
		+ 5.54
		+ 0.29
		+ 17.33
+ 4.88	Skins M/S to R/S - Actual weight of pump access door calculation was in error.	
- 7.52	Structure for Main U/C - Actual weights of housing and Shaft Fork End.	
- 1.58	Joint O/W to I/W - Incorporation of approximately 25% actual weights	
+ 0.94	I/W Structure Aft R/Spar - Actual weight of Beam # 3 Production drawing estimates rear Engine Mount housing	- 0.36
		+ 1.30
		- 0.94
+ 10.12		

Fin & Rudder

+ 3.30 Rudder - Actual weight of MK 1 Rudder  
+ 3.30

Fuselage Fwd. Sta. 255"

+ 3.75	Top Longeron F.F. - packing which requires machining has been changed from Mg. to Al.	
+ 2.49	Windscreen - Actual weight of casting and some hardware alterations	
+ 3.56	Pilot's Canopy - Actual weight of glass and machined casting First production drawing estimate of seal.	+ 3.06
		+ 0.50
		+ 3.56
+ 5.35	Navigator's Canopy - Actual weight of MK 1 casting, window frame, and glass Detailed estimate made of hardware	+ 2.56
		+ 2.79
		+ 5.35
+ 15.15		

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DETAILED WEIGHT CHANGES TO I.B.M.  
TABULATED DETAILS OF May 1st, 1957.

WEIGHT CHANGES

WEIGHT (lb.)

Engine Bay - Sta. 591.65" to 742.5"

+ 1.43	Engine Rails - estimated to production drawings, increase in web gauge.	
- 11.65	Engine Doors # 1 and # 2 - first estimates to scheme drawings, allowances only previously	
	Door # 1	- 12.33
	Door # 2	+ 0.68
		- 11.65
- 10.22		

Rear Fuselage Sta. 742.5" Aft.

+ 4.46	Engine Access Doors - Production drawing estimates of most frames, webs etc. increased in gauge compared to MK 1 on which earlier estimates were based.	
+ 4.46		

Engine Group

0.00	Starters & Gear Boxes on Engine - C.G. correction to C.S. Drive	
- 64.31	Fuel System - entirely redesigned for MK 2 Aircraft, the proportioners are no longer used.	
- 3.86	Engine Mounts - some production drawing estimates including design changes on front I/B Mounting	
- 3.83	Engine Mounting Accessories - some production drawing estimates - the locating block front centre mounting was over estimated.	
- 72.10		

Flying Controls Group

+ 3.56	Mechanical Flying Controls - redesign O/B Aileron Control Rod	+ 2.24
	Addition of stick force transducer	+ 1.00
	Miscellaneous minor changes	+ 0.32
		+ 3.56
+ 3.62	Flying Control Hydraulics I/W - Steel tubes replace Jarry hoses	+ 1.66
	Jack installation hardware	+ 1.00
	Miscellaneous other changes	+ 0.96
		+ 3.62
+ 0.33	Flying Control Hydraulics Rudder - Miscellaneous minor piping changes etc.	
+ 7.51		

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DETAILED WEIGHT CHANGES TO I.B.M.  
TABULATED DETAILS OF May 1st, 1957.

WEIGHT CHANGES

WEIGHT (lb)

Equipment - Fixed & Removable

+ 18.35	Windscreen De-misting - increase in size of transformer redesign of panel E 40 Controls etc. added for Navigator's window de-misting	+ 10.00 + 2.00 <hr/> + 6.35 + 18.35
0.00	Electrics D.B. - C.G. correction for alternators	
+ 98.42	Ejector Seats - redesign of Martin Baker 80 ft/sec. Ejection Seat - Manufacturer's weights addition of Emergency Oxygen (called up with seat installation - see below	+ 76.00 <hr/> + 22.42 + 98.42
- 19.85	Oxygen System - Emergency system now called up on Seats see above redesign of piping in cockpit	- 20.28 + 0.43 <hr/> - 19.85
+ 6.40	Low Pressure Pneumatics - piping for waveguide compressor, hydraulic system and armament pack inflatable seal added (seal with pack structure.)	
+ 11.60	Utility Hydraulics D.B. - 200 cu. ins. accumulator replaces 80 cu. ins.	
- 18.25	Missile Pack Hydraulics - addition of 40 G.P.M. filter Vendors weights available for majority of equipment.	+ 12.00 <hr/> - 30.25 - 18.25
+ 20.70	Missile Pack Structure - previous estimates were made prior to issue of scheme drawings, structure now partially re-estimated. Longitudinal beams # 1 to 8 Wing doors - largely redesigned production drawing estimates Fin doors - redesigned, production drawing estimates Curtain wall - initial allowance too high Forward transverse beam - first drawing estimate Gear Uplock structure - partial re- design Pack and Door Sealing - seals on doors now included with production drawings of doors Door actuation mounting frames added Door jack mounting frames added Slinging Brackets added Rear Beam, redesign of track 'back up' structure (tracks included)	+ 34.64 + 19.64 + 14.48 - 3.61 + 1.42 + 1.48 <hr/> - 11.74 + 2.60 + 3.81 + 1.00 + 3.30

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DETAILED WEIGHT CHANGES TO I.B.M.  
TABULATED DETAILS OF May 1st, 1957.

WEIGHT CHANGES

WEIGHT (lb)

Equipment - Fixed & Removable (Cont'd.)

Missile Pack Structure (cont'd.)

Development allowance reduced since it is partially absorbed above	-	22.46
Forward attachment - now with mechanisms see below	-	8.86
Aft. Attachment - now mechanisms	-	15.00
	+	<u>20.70</u>
- 40.56 Sparrow Pack Mechanisms - these have mostly been re-estimated largely to production drawings.		
Drag links - production drawing estimates	-	2.08
Uplocks - partially redesigned, production drawing estimates	-	0.56
Ground handling bars added at aft end	+	1.15
Launcher stops deleted	-	34.56
Small upstops added	+	2.56
Fwd pack attachment - now included here see also structure(above)	+	8.07
Aft. pack attachment - now included here	+	11.86
Fwd. & Aft Missile Telescopic Links- fairly extensive redesign	-	27.00
	-	<u>40.56</u>

+ 76.81

Operational Load

+ 15.00 Water Trapped Air Conditioning - no allowance was previously made for that water trapped in Evaporator.

+ 15.00

+ 50.13 TOTAL WEIGHT CHANGES

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Date: June 1st, 1957  
 Aircraft C-105 MK. 2  
 Production A/C

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 Sheet # 3-1  
 Prepared By: K. Griffin

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 WEIGHT & C.G. SUMMARY  
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DESCRIPTION	WEIGHT lb.	H. ARM ins.	V. ARM ins.
<b>STRUCTURE</b>	18,350.01	564.26	137.68
Wing	9,980.77	642.76	142.21
Fin & Rudder	1,024.00	754.25	209.28
Fuselage Fwd. Sta. 255"	2,481.60	186.85	128.88
Sta. 255"-485"	1,681.78	379.07	129.47
Sta. 485"-591.65"	952.35	533.07	103.64
Sta. 591.65"-742.5"	1,480.48	661.39	109.39
Sta. 742.5" Aft.	696.45	795.40	127.90
'Marry Up'	52.58	468.91	103.89
<b>UNDERCARRIAGE - Retracted</b>	2,551.77	487.22	134.79
Main Undercarriages	1,901.62	539.31	141.00
Main U/C Doors & Fairings	291.80	537.10	138.40
Nose Undercarriage	333.81	170.80	99.70
Nose U/C Door & Fairing	24.54	162.24	88.23
<b>POWER PLANT &amp; SERVICES</b>	10,685.88	674.15	121.33
Engines & Accessories P.S.13	9,090.12	690.98	121.17
Gear Box & Drives on Fuselage	281.84	601.70	102.49
Engine Controls	32.43	375.76	118.61
Gear Box, Starter & Drives on Engine	315.45	615.98	105.24
Engine Nose Bullet (Orenda supplied)	70.00	587.17	116.00
Fire Extinguisher System	70.46	702.44	134.82
Engine Mountings	132.38	666.82	136.52
Fuel System	693.20	530.62	134.87
<b>FLYING CONTROLS GROUP</b>	1,801.45	686.69	140.08
Mechanical Flying Controls	946.48	687.84	148.61
Hydraulic Flying Controls	854.97	685.42	130.63
<b>EQUIPMENT - FIXED AND REMOVABLE</b>	7,974.66	325.77	112.15
Instruments	46.07	163.68	138.70
Probe	18.50	-40.00	108.00
Cockpit Pressure Sealing	5.00	186.00	130.00
Oxygen System	23.59	253.72	156.43
Air Conditioning System	897.00	331.77	133.38
Hydraulic Main System	609.09	500.86	117.57
Cabin Insulation	14.31	187.48	132.00
Brake Parachute	62.38	769.41	143.24
Electrical System	1,242.38	426.80	112.53
Low Pressure Pneumatics	55.70	416.79	123.99
Surface Finish	100.00	591.52	140.20
Intake De-icing Boots	51.84	197.02	118.00
Radome Anti-icing	8.88	51.49	125.00
Canopy Actuation	62.05	222.11	154.47
Cabin Consoles	17.45	174.76	124.34
Radar Door Actuation	10.00	268.00	95.00
Ejector Seats	284.42	202.80	136.25
Radio & Radar removable	1,850.50	178.50	104.46
Radio & Radar fixed	621.00	234.04	116.15

continued

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 Production Aircraft

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 WEIGHT & C.G. SUMMARY

DESCRIPTION	WEIGHT lb.	H.ARM ins.	V.ARM ins.	M.A.C. %
<u>Equipment (Fixed &amp; Removable) (Cont'd.)</u>				
Sparrow Pack Structure	870.70	389.60	96.00	
Sparrow Pack Mechanisms	584.76	377.66	98.93	
Sparrow Pack Hydraulics	331.94	373.52	99.00	
Sparrow Pack Electronics	143.00	332.00	100.00	
Sparrow Pack Electrics	64.10	362.29	95.00	
AIRCRAFT BASIC WEIGHT	41,363.77	547.25	128.46	
USEFUL LOAD (Normal Combat)	18,650.76	516.20	136.66	
Crew	430.00	194.00	136.50	
Oil	138.97	636.92	110.57	
Alcohol	22.00	93.00	138.00	
Engine Fire Extinguisher Fluid	25.00	730.00	129.00	
Residual Fuel	218.40	553.98	134.04	
Missiles	1,728.00	389.29	88.30	
Oxygen Charge	13.39	259.68	159.91	
Water for Air Conditioning	275.00	268.00	131.75	
Fuel for Combat Mission	15,800.00	542.05	142.30	
Normal Combat Mission	60,014.53	537.60	131.01	28.07
Half Combat Mission Fuel (1,013 gals. @ 7.8 lb/gal.)	7,900.00	539.19	128.37	28.51
Combat Weight (Half Combat Mission Fuel)	52,114.53	543.20	139.55	
Operational Weight Empty	44,214.53	537.10	128.88	27.93
Operational Weight Empty Less Missiles	42,486.53	538.94	125.84	28.44
Max. Internal Fuel (2,492 gals. @ 7.8 lb/gal.)	19,438.00	536.01	126.97	27.63
A.U.W. Max. Internal Fuel	63,652.53	538.17	123.39	28.23
Max. External Fuel (500 gal. @ 7.8 lb/gal. + Drop Tank)	4,248.20	541.98	128.54	29.28
A.U.W. Max. Internal and External Fuel	67,900.73	544.23	124.82	29.90
A.U.W. Max. Internal Fuel	63,652.53	541.85	114.16	
A.U.W. Max. Internal Fuel	63,652.53	537.79	132.22	28.12
A.U.W. Max. Internal Fuel	63,652.53	539.29	129.73	28.53
A.U.W. Max. Internal and External Fuel	67,900.73	521.84	60.67	
A.U.W. Max. Internal and External Fuel	67,900.73	536.79	127.74	27.85
A.U.W. Max. Internal and External Fuel	67,900.73	538.20	125.41	28.23

N.B. 1) Aircraft Datum = 120" above arbitrarily chosen ground line.

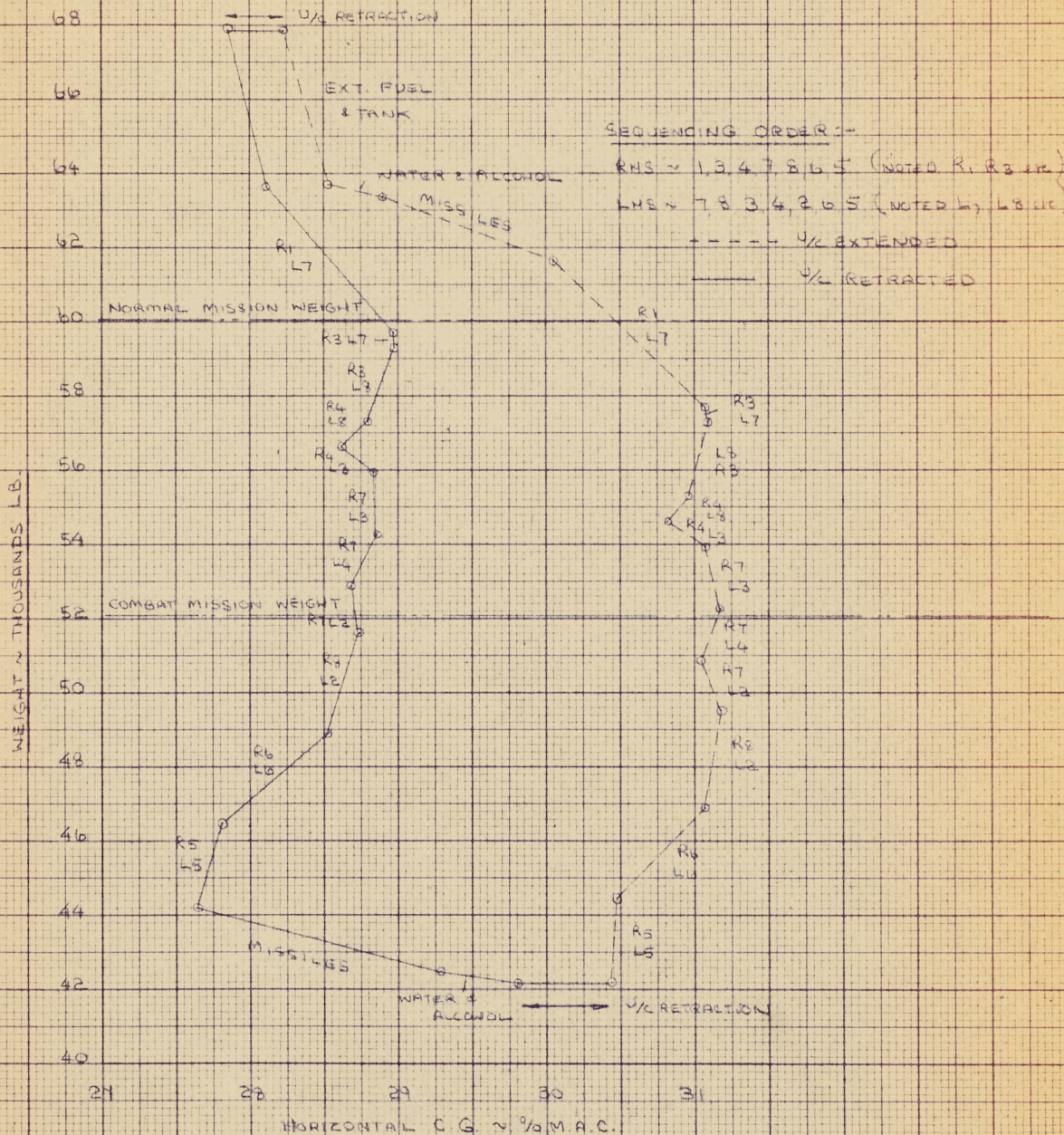
2) Drop Tank Weight has increased by 22 lb due to introduction of air bottle etc. in tank for transfer purposes.

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C-105 MK 2 PRODUCTION AIRCRAFT  
HORIZONTAL C.G. ENVELOPE FOR A  
FLIGHT CONDITIONS

BY: Kathleen Lyffus  
DATE: June 19, 1974  
SHEET: 4-1

USING FUEL SEQUENCING ORDER AS SUPPLIED  
TO MINNEAPOLIS HONNEWELL (W/ AVRO Spec 303)  
FOR USE UNTIL NECESSITY OF DAMPING SYSTEM PROVEN



G9-12  
10 X 10 TO THE 1/2 INCH  
MADE IN CANADA

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REPORT NO. 7-0400-34-8

BY Kathleen Goff

DATE: June 1961

SHEET: 4-2

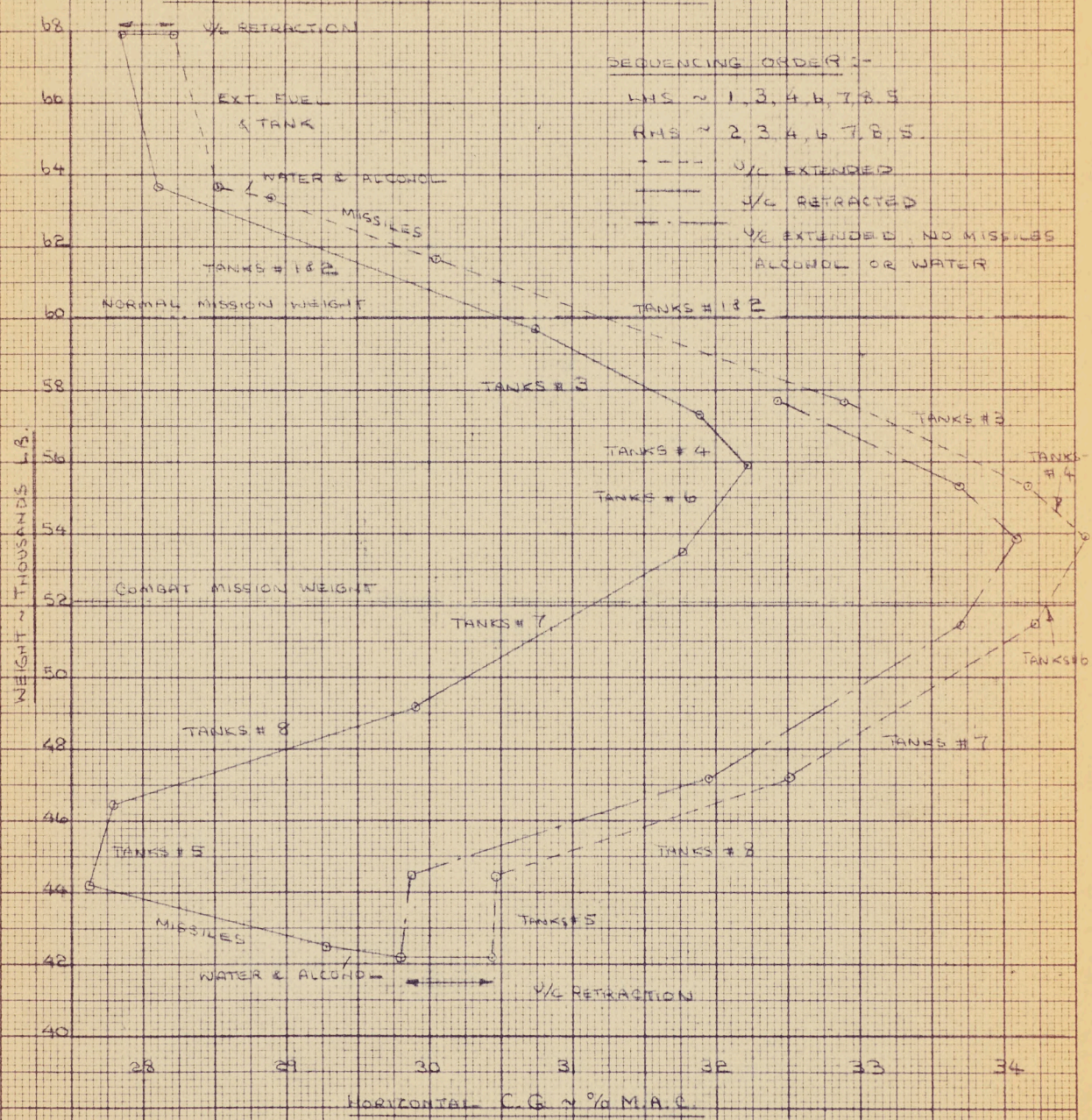
C105 MK2 PRODUCTION AIRCRAFT  
HORIZONTAL C.G. ENVELOPE FOR

A/C FLIGHT CONDITIONS

USING ALTERNATE FUEL SEQUENCING

AS SUPPLIED TO MINNEAPOLIS HONEYWELL (ref AUTO spec 503)

TO ACHIEVE REQUIRED 34% M.A.C. AT COMBAT



G9-12  
10 X 10 TO THE 15 INCH  
MADE IN CANADA

SECRET

AVRO AIRCRAFT LTD.

MALTON, ONT.

WEIGHT AND C. OF G BY FUNCTIONAL COMPONENTS

PROJECT C-105 MK 2

DESCRIPTION		REFERENCE NO.	COMP. NO.	WEIGHT
TOTAL WING GROUP		1000000		
OUTER WING		1010000		
100	OUTER WING SKINS	1010000164		929107
100	POSTS AND INTERCOSTALS	1010000264		24367
100	OUTER WING SPARS	1010000364		392587
100	OUTER WING RIBS	1010000464		134566
18	AILERON CONTROL BOX	1010000664		379207
100	RIB 12	1010000764		76266
100	O W AILERON JACK FITTING	1010000964		10467
	AILERON JOINTS AND FAIRING	1010010		32937
				197945
AILERON		1020000		
100	AILERON STRUCTURE	1020000174		336007
				33600
ELEVATOR MARRY UP		1030000		
97	ELEVATOR	1030000082		15977
				449007
				46497
INNER WING		1040000		
79	MAIN U C STRUCTURE	1040000162		330715
27	FRONT SPAR I W	1040000262		111104
27	MAIN SPAR I W	1040000362		146395
27	FWD CENTRE SPAR I W	1040000462		42456
27	AFT CENTRE SPAR I W	1040000562		33866
27	REAR SPAR	1040000662		76677
32	I W STRUCTURE F S TO M S	1040000762		1059184
	I W STRUCTURE M S TO R S	1040000862		149796
3	STRUCTURE AFT OF REAR SPAR	1040000962		304687
11	ELEVATOR CONTROL BOX I W	104001062		427177
25	TRANSP JOINT MARRY UP	1040011		70656
74	CENTRE LINE JOINTS	104001262		586430
	INNER WING SKINS	104001362	2	202806
	STRUT PICK UP FITTINGS	104001462		146176
31	RIBS 1 TO 9 INNER WING	104001662		812046
	DORSAL FAIRING	104001762		954
100	RIB 10	104001862		108006
	FUSELAGE HINGE JOINT I W	104001962		138126
25	TRANSP JOINT	104002062		129426
	FUSELAGE HINGE JOINT	1040021		37405
	DORSAL FAIRINGS I W	1040023		56295
				667027

WEIGHT AND C. OF G BY FUNCTIONAL GROUP COMPONENT

REPORT NO. 7-0400-34 Iss 8

June 1st, 1957

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REFERENCE NO.	COMP. NO.	WEIGHT	H. ARM	V. ARM	H. MOMENT	V. MOMENT
1000000						
1010000						
1010000164		92910	70646	13597	65637199	12632973
1010000264		2436	73207	13410	1783323	326668
1010000364		39258	70118	13636	27526924	5353221
1010000464		13456	69506	13650	9352727	1836744
1010000664		37920	77409	13508	29353493	5122234
1010000764		7626	64873	13832	4947215	1054828
NG RING 1010000964		1046	72791	13670	761394	142988
10100010		3293	78726	13224	2592447	435466
		197945			141954722	26905122
1020000						
1020000174		33600	79213	13556	26615568	4554816
		33600			26615568	4554816
1030000						
1030000082		1597738	1014260		1178746	227732
		44900755	2314260		33909827	6402740
		46497			35088573	6630472
1040000						
1040000162		33071	57757	13983	19100817	4624318
1040000262		11110	48428	14260	5380351	1584286
1040000362		14639	56570	14280	8281282	2090449
1040000462		4245	60417	14317	2564702	607757
1040000562		3386	65494	14446	2217627	489142
1040000662		7667	70374	14420	5395575	1105581
S 1040000762	1	105918	49929	14405	52883798	15257488
S 1040000862		14979	60964	14572	9131798	2182740
SPAR 1040000962		30468	72153	14904	21983576	4540951
1040001062		42717	72500	14327	30969825	6120065
10400011		7065	63621	13876	4494824	980339
1040001262		5864	36614	15062	38788239	8832809
1040001362	2	20280	62452	14466	137569266	31865705
1040001462		14617	61865	14597	9042807	2133643
1040001662		51204	61287	14499	31381395	7424068
1040001762		9548	28016	150	45866	15343
1040001862		10800	63683	13835	6877764	1494180
W 1040001962		13812	62104	13790	8577804	1904675
1040002062		12942	63071	13710	8162649	1774348
10400021		3740	52796	14309	1974570	535157
10400023		5629	57249	16026	3222546	902104
		667027			408047081	96465148

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WEIGHT AND C. OF G BY

FUNCTIONAL GROUP COMPONENT

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REFERENCE NO.	COMP. NO.	WEIGHT	H. ARM	V. ARM	H. MOMENT	V. MOMENT
1050000	62	22138	46841	14423	10369661	3192964
		22138			10369661	3192964
1060000	65	30870	63013	13561	19452113	4186281
		30870			19452113	4186281

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REFERENCE NO.	COMP. NO.	WEIGHT	H. ARM	V. ARM	H. MOMENT	V. MOMENT
2010000	83	85170	74957	21170	6304777	18050489
2010002		4830	68538	15355	3310385	741647
		90000			67151262	18772136
2020000	84	12400	81325	21438	10084300	2658312
		12400			10084300	2658312

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	DESCRIPTION	REFERENCE NO.	COMP. NO.	WEIGHT	
	TOTAL FUSELAGE GROUP	3000000			
	FUSELAGE BASIC STRUCTURE	3010000			
	RADOME	301000151		9840	
	RADAR NOSE STRUCTURE	301000351		18000	
	SKIN F F	301000452		80941	
	SKIN C F	301000554		210483	
	SKIN D B	301000656		58805	
	SKIN E B	301000758		164896	
4	FORMERS F F	301001152		105311	
	FORMERS C F	301001254		277863	
	FORMER D B	301001356		74575	
	LIGHT FORMERS E B	301001458		103706	
	HEAVY FORMERS E B	301001558		186586	
	LOWER LONGERONS F F	301001652		68461	
	INNER LONGERON E B	301001758		71846	
	LONGERON E B	301001858		69056	
	TOP LONGERONS E B	301001958		6386	
	LOWER SHEAR PANEL	301002052		29882	
	TOP WING LONGERONS D B	301002156		4985	
	LONGERONS C F	301002252		532	
	LONGERONS C F	301002354		138134	
	LONGERONS D B	301002556		105695	
	ELECTRONICS BAY STRUCTURE	301002654		45232	
59	LONGITUDINAL BEAMS D B	301002756		65705	
	RADAR ACCESS DOOR C F	301002854		21082	
72	MAIN FRAME AT STN 538 77	301002956		59805	
	DIVE BRAKE ACCOM STRUCTURE	301003056		36345	
20	TOP LONGERONS F F	301003152		185711	
100	DUCT C F	301003254		332863	
	DUCT D B	301003356		255005	
	CANOPY ARCHES	301003452		85352	
4	ACCESS PANEL STIFFNERS	301003656		38655	
66	NOSE U C SUPPORT STRUCTURE	301003752		33432	
3	CREW BULKHEADS	301003852		122722	
	EQUIPMENT BAY STRUCTURE	301003954		71112	
86	WINDSCREEN	301004152		130031	
	SERV ACCESS DOORS AND PNLS	301004258		60876	
	DORSAL FAIRING AIR OUTLET	301004454		206129	
	INTERMEDIATE FORMERS E B	301004558		487372	
	ENGINE ACCESS DOORS E B	301004658		107356	
	SEALING MISSILE BAY	301004754		69732	
	MISCELLANEOUS ITEMS C F	301004854		39232	
	ARMAMENT BAY ROOF	301004954		132163	
	BULKHEAD AT STA 120	301005052		306012	
	BULKHEAD AT STA 255	301005152		104292	
	BULKHEAD STA 485	301005254		123514	
	ENG TUNNEL E B	301005458		550316	
	INTEGRAL FUS FUEL TANK	301005554		203593	
	COCKPIT FLOOR	301005652		574317	
	DORSAL OVER FUEL TANK	301006154		509741	

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	REFERENCE NO.	COMP. NO.	WEIGHT	H. ARM	V. ARM	H. MOMENT	V. MOMENT
	3000000						
RE	3010000						
	3010000151		9840	4232	11045	416429	1086828
	3010000351		18000	9450	11400	1701000	2052000
	3010000452		8094	19000	12079	1537860	977674
	3010000554		21048	37610	14296	7916153	3009022
	3010000656		5880	53407	11155	3140332	655914
	3010000758		16489	66905	11036	11031965	1819726
	3010001152		10531	18330	12018	1930332	1265616
	3010001254		27786	37474	13307	10412526	3697483
	3010001356		7457	53710	11315	4005155	843760
	3010001458		10370	66593	11699	6905694	1213186
	3010001558		18658	65947	10967	12304391	2046223
	3010001652		6846	18430	9044	1261718	619152
	3010001756		7184	65234	9213	4686411	661862
	3010001858		6905	65809	9781	4544111	675378
	3010001958		638	66605	13911	424940	88752
	3010002052		2988	23420	8900	699790	265932
	3010002156		498	53899	13550	268417	67479
	3010002252		532	25295	15250	13406	8083
	3010002354		1381	34111	12289	5678801	1697480
	3010002556		1056	95236	9879	5534140	1044112
URE	3010002654		4523	27443	9164	1241247	414488
	3010002756		6570	52007	9125	3416860	599513
	3010002854		2108	27448	8976	578604	189214
77 TURE	3010002956		5980	53877	10383	3221845	620903
	3010003056		3634	50399	9299	1831500	337926
	3010003152		1857	11928	614750	3581603	2739223
	3010003254		3328	63725	12919	12401032	4300218
	3010003356		2550	05395	211850	13757760	3021750
	3010003452		8535	22798	16050	1945809	1369868
	3010003656		3865	53918	10294	2083931	397863
TURE	3010003752		3343	21049	9186	703668	307088
	3010003852		1227	22058	912284	2526682	1507492
E	3010003954		7111	12836	313518	2016893	961265
	3010004152		1300	313814	15008	1796234	1951490
PNLS LET	3010004258		6087	67073	9293	4082734	565665
	3010004454		2061	29195	16400	601709	338004
B	3010004558		4873	72976	11295	3556120	550405
	3010004658		1073	564644	9044	6939533	970873
	3010004754		6973	2148	10900	224072	75973
F	3010004854		3923	7000	12500	145040	49000
	3010004954		1321	638438	11427	5079966	1510192
	3010005052		3060	12000	12280	367200	375768
	3010005152		1042	925500	12027	2659395	1254296
	3010005254		1235	148500	10396	5990235	1284010
	3010005458		5503	165702	11799	36156468	6493108
	3010005554		2035	939339	14536	8009027	2959384
	3010005652		574	317640	11575	1013065	664752
	3010006154		509	741352	14205	2107711	724029

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WEIGHT AND C. OF G BY FUNCTIONAL COMPONENT

PROJECT \_\_\_\_\_

DESCRIPTION	REFERENCE NO.	COMP. NO.	WEIGHT
SHIELD EXHAUST DEFLECTOR	301006254		19653
SHEAR PANEL BELOW NAV ARCH	301006352		20742
PACK MOUNTING STRUCTURE	301006454		23652
ENG ACCESS DOORS R F	301006559		92407
TUNNEL FIXED R F	301006659		117887
SKIN AND INTERCOSTAL R F	301006759		51557
FAIRING UNDER RUDDER R F	301006859		26067
FORMERS FIXED R F	301006959		92907
LONGERONS C BEAM FIXED R F	301007059		27997
NACELLES REMOVABLE R F	301007159		195008
CNTR STRUC STING REMOV R F	301007259		92678
MISC ITEMS STRUCTURE E B	301007358		9126
MTG BRKTS SIDE PANEL D B	301007556		2135
FORMERS LOWER PANEL D B	301007656		76065
LOWER PANEL D B	301007756		50545
JOINT F F TO C F	3010078		8552
JOINT AIR INTAKES TO F F	3010079		9522
JOINT C F TO D B	3010080		5004
JOINT D B TO E B	3010081		25085
FUSE JOINT AT STA 742 50	3010082		4437
DROP TANK MTG STRUCT D B	301008356		8536
ENG RAILS ATTACHM TO FORM	301008558		36246
STRUCT AT ENG ACCESS DOORS	301008558		65436
MISC STRUCTURE F F	301008652		5521
			608742
96 DIVE BRAKES	302000072		111505
96 DIVE BRAKES C A	3020001		4064
			11556
AIR INTAKES	3030000		
AIR INTAKES	303010055		758282
			75828
PILOTS AND NAVIG CANOPIES	3040000		
76 PILOTS CANOPY	304010053		240811
			24081
48 NAVIGATORS CANOPY	304020053		143172
			14317

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	REFERENCE NO.	COMP. NO.	WEIGHT	H. ARM	V. ARM	H. MOMENT	V. MOMENT
OR	3010062	54	1965	33441	16400	657116	322260
ARCH	3010063	52	2074	25702	15350	533059	318359
E	3010064	54	2365	29226	10254	691195	242507
	3010065	59	9240	77179	9849	7131340	910048
	3010066	59	11788	77028	12800	9080061	1508864
F	3010067	59	5155	76878	13672	3963061	704792
F	3010068	59	2606	78130	15380	2036068	400803
	3010069	59	9290	77920	13630	7238768	1266227
R F	3010070	59	2799	77170	12570	2159988	351834
	3010071	59	19500	82450	12900	16077750	2515500
R F	3010072	59	9267	83166	13483	7708847	1249470
B	3010073	58	912	66401	10278	605577	93735
B	3010075	56	213	52402	13330	111616	28393
B	3010076	56	7606	54565	9005	4150214	684920
	3010077	56	5054	55457	8790	2802797	444247
	3010078		855	25500	12000	218025	102600
F	3010079		952	22000	12000	209440	114240
	3010080		500	48500	9800	242500	49000
	3010081		2508	58478	9150	1466628	229482
50	3010082		443	74250	11500	328928	50945
B	3010083	56	853	67428	8825	575161	75277
ORM	3010085	58	3624	68560	11337	2484614	410853
ORS	3010085	58	6542	64120	9259	4194730	605724
	3010086	52	552	18750	11500	103500	63480
			608742			287220497	73072982
	3020000	72	11150	50846	9062	5669329	1010413
	3020001		406	48794	9374	198104	38058
			11556			5867433	1048471
	3030000						
	3030100	55	75828	21086	11872	15989092	9002300
			75828			15989092	9002300
IES	3040000						
	3040100	53	24081	17678	15913	4257039	3832010
			24081			4257039	3832010
	3040200	53	14317	23279	16220	3332854	2322217
			14317			3332854	2322217

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ITEM	REFERENCE NO.	COMP. NO.	WEIGHT	H. ARM	V. ARM	H. MOMENT	V. MOMENT
DOWN	40000000						
UP	40100000						
	401010092		190162	53931	14100	102556268	26812842
			190162			102556268	26812842
S	401020062		29180	53710	13840	15672578	4038512
			29180			15672578	4038512
UP	40200000						
	402010091		33381	17080	9970	5701475	3328086
			33381			5701475	3328086
NG	402020052		2454	16224	8823	398137	216516
			2454			398137	216516

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WEIGHT AND C. OF G BY FUNCTIONAL  
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DESCRIPTION	REFERENCE NO.	COMP. NO.	WEIGHT	H
ENGINE GROUP	5000000			
PS 13 ENGINES	5010000		9075626	
			907562	
PS 13 ENGINES SERV ACCESS	5010100		14506	
			1450	
ACC GEAR BOX ON FUS D B	502000156		45245	
ACC GEAR BOX ON FUS E B	502000258		236606	
			28184	
ENGINE CONTROLS	5030000			
ENGINE CONTROLS F F	503000152		14581	
ENGINE CONTROLS C F	503000254		2643	
ENGINE CONTROLS D B	503000356		5084	
ENGINE CONTROLS E B	503000458		10136	
			3243	
STARTER AND ENG GEAR BOX	5040000		315456	
			31545	
ENGINE ANTI ICING	5050000		70005	
			7000	
FIRE EXT SYSTEM	5060000			
ENG FIRE EXT SYSTEM ENG	5060001		69007	
ENG FIRE EXT SYSTEM D B	506000256		1465	
			7046	
ENGINE MTGS AND BRACKETS	5070000			
ENGINE MOUNTS	5070001		84216	
ENGINE MTG ACCESSORIES	5070002		48176	
			13238	
FUEL SYSTEM	5080000			

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SHEET 5-7

	REFERENCE NO.	COMP. NO.	WEIGHT	H. ARM	V. ARM	H. MOMENT	V. MOMENT
	5000000						
	5010000		907562	691061	12120	627179796	109996514
			907562			627179796	109996514
ESS	5010100		1450	63819	10390	925376	150655
			1450			925376	150655
B	5020001	156	4524	57875	9607	2618265	434621
B	5020002	58	23660	60609	10372	14340089	2454015
			28184			16958354	2888636
	5030000						
	5030001	52	1458	16129	12476	235161	181900
	5030002	54	264	30813	11789	81346	31123
	5030003	56	508	49991	13459	253954	68372
	5030004	58	1013	63982	10194	648138	103265
			3243			1218599	384660
OX	5040000		31545	61598	10524	19431089	3319796
			31545			19431089	3319796
	5050000		7000	58717	11600	4110190	812000
			7000			4110190	812000
G	5060000						
B	5060001		6900	70560	13477	4868640	929913
B	5060002	56	146	55318	13749	80764	20074
			7046			4949404	949987
TS	5070000						
	5070001		8421	67834	14106	5712301	1187866
	5070002		4817	64669	12857	3115106	619322
			13238			8827407	1807188
	5080000						

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REFERENCE NO.	COMP. NO.	WEIGHT	H. ARM	V. ARM	H. MOMENT	V. MOMENT
50800001	54	10200	40077	14083	4087554	1430346
50800002	56	14055	53818	10639	7564120	1495311
50800003	58	685	64414	12612	441236	86392
50800004	62	43000	55379	14428	23812970	6204040
50800005		626	65901	9594	412540	60058
50800006		754	61525	9658	463899	72821
		69320			36782619	9348968

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	REFERENCE NO.	COMP. NO.	WEIGHT	H. ARM	V. ARM	H. MOMENT	V. MOMENT
	6000000						
	6010000						
F	6010001	52	87.59	158.07	115.43	13845.55	10110.51
F	6010002	54	88.5	339.20	115.26	30019.2	10200.5
B	6010003	56	35.0	486.99	118.80	17044.7	4158.0
N	6010005	83	126.88	787.81	221.76	99957.33	28136.91
W	6010006	62	408.84	717.51	143.75	293346.79	58770.75
W	6010007	64	304.36	770.75	135.61	234585.47	41274.26
A	6010008		64.6	709.82	143.38	45854.4	9262.3
			946.48			651026.77	140654.51
LICS	6020000						
D B	6020001	56	259.2	574.86	95.94	14900.37	2486.76
E B	6020002	58	408.97	655.22	111.16	267965.32	45461.11
R F	6020003	59	48.75	875.10	82.4	3642.0	519.6
I W	6020004	62	244.48	703.31	147.34	171945.23	36021.68
O W	6020005	64	121.81	740.77	135.76	90233.19	16536.93
FIN	6020006	83	53.31	761.65	208.75	40603.56	11128.46
			854.97			586011.87	111686.90

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	DESCRIPTION	REFERENCE NO.	COMP. NO.	WEIGHT	H
	FIXED EQUIPMENT GROUP	7000000			
	INSTRUMENTS	7010000			
	INSTRUMENTS	7010000152		440710	
	NAVIC TABLE AND STOWAGE	7010000452		20022	
				4607	
	COCKPIT PRESSURE SEALING	702000052		50018	
				500	
	OXYGEN SYSTEM	7030000			
	OXYGEN SYSTEM	7030000152		235925	
				2359	
	AIR CONDITIONING SYSTEM	7040000			
	AIR CONDITIONING SYST F F	7040000152		1319322	
	AIR CONDITIONING SYST C F	7040000254		6305830	
	AIR CONDITIONING SYST D B	7040000356		676353	
65	AIR CONDITIONING SYST E B	7040000458		668663	
				89700	
	HYDRAULICS MAIN SYSTEM	7050000			
14	UTILITY HYDRAULICS F F	7050000152		841520	
5	UTILITY HYDRAULICS C F	7050000254		416241	
9	UTILITY HYDRAULICS D B	7050000356		2447655	
21	UTILITY HYDRAULICS E B	7050000458		724060	
23	UTILITY HYDRAULICS I W	7050000562		1331155	
14	UTILITY HYDR NOSE U C	7050000691		32517	
23	UTILITY HYDR MAIN U C	7050000792		298052	
				60909	
	CABIN INSULATION	707000052		143110	
				1431	
	BRAKE PARACHUTE	7080000			
	BRAKE PARACHUTE F F	7080000152		45516	
	BRAKE PARACHUTE R F	7080000559		565982	
	BRAKE PARACHUTE I W	7080000662		12462	
				6238	

WEIGHT AND C. OF G BY FUNCTIONAL GROUP COMPONENT

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	REFERENCE NO.	COMP. NO.	WEIGHT	H. ARM	V. ARM	H. MOMENT	V. MOMENT
	7000000						
	7010000						
E	7010001	52	4407	16112	13909	710056	612970
	7010004	52	200	22000	13000	44000	26000
			4607			754056	638970
NG	7020000	52	500	18600	13000	93000	65000
			500			93000	65000
	7030000						
	7030001	52	2359	25372	15643	598525	369018
			2359			598525	369018
M	7040000						
F	7040001	52	1319	322361	11950	2950087	1576564
C	7040002	54	6305	830120	13750	18993070	8670475
D	7040003	56	6763	53183	11950	3596766	808179
E	7040004	58	6686	63111	13600	4219601	909296
			89700			29759524	11964514
	7050000						
	7050001	52	8415	20016	10853	1684346	913280
	7050002	54	4162	43384	10420	1805642	433680
	7050003	56	2447	655469	10959	13576592	2682325
	7050004	58	7240	60647	10852	4390843	785685
	7050005	62	1331	155360	14235	7368970	1894821
	7050006	91	325	19033	9521	61857	30943
	7050007	92	2980	54325	14100	1618885	420180
			60909			30507135	7160914
	7070000	52	1431	18748	13200	268284	188892
			1431			268284	188892
	7080000						
	7080001	52	455	16913	12869	76954	58554
	7080005	59	5659	82094	14437	4645699	816990
	7080006	62	124	62022	14500	76907	17980
			6238			4799560	893524

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DESCRIPTION	REFERENCE NO.	COMP. NO.	WEIGHT	
ELECTRICAL SYSTEM	7090000			
ELECTRICAL WIRING	7091400			
ELECTRICAL WIRING R N	709140151		129	
ELECTRICAL WIRING F F	709140252		29661	
ELECTRICAL WIRING C F	709140354		23543	
ELECTRICAL WIRING A I	709140455		12742	
ELECTRICAL WIRING D B	709140556		90155	
ELECTRICAL WIRING E B	709140658		645	
ELECTRICAL WIRING I W	709140862		89095	
ELECTRICAL WIRING FIN	709140983		3527	
ELECTRICAL WIRING N U C	709141091		3301	
60 ELECTRICAL WIRING ENG	7091411		20026	
ELECTRICAL WIRING C A	7091412		137463	
			41141	
30 ELECTRICS F F	709150052		152481	
			15248	
ELECTRICS C F	709160054		87094	
			8709	
ELECTRICS E B	709170058		6706	
ELECTRICS ENG	7091701		134325	
ELECTRICS C A	7091702		7186	
			14820	
ELECTRICS FIN	709180083		838	
			83	
ELECTRICS I W	709190062		23366	
ELECTRICS C A	7091901		1126	
ELECTRICS M U C	709190292		745	
			2522	
ELECTRICS A I	709200055		50902	
			5090	
ELECTRICS D B	709210056		317895	
			31789	
WINDSCREEN DEMISTING	709220052		43862	
			4386	

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REFERENCE NO.	COMP. NO.	WEIGHT	H. ARM	V. ARM	H. MOMENT	V. MOMENT
7090000						
7091400						
709140151		129	9285	12000	11978	15480
709140252		2966	19977	11200	592518	332192
709140354		2354	39703	11000	934609	258940
709140455		1274	21984	12000	280076	152880
709140556		9015	52769	9921	4757125	894378
709140658		64	59500	9200	38080	5888
709140862		8909	54111	13900	4820749	1238351
709140983		352	79754	30000	280734	105600
709141091		330	18600	9800	61380	32340
7091411		2002	60683	10000	1214674	200200
7091412		13746	33473	11234	4601199	1544226
		41141			17593322	4780475
709150052		15248	15464	11095	2357951	1691766
		15248			2357951	1691766
709160054		8709	45415	10760	3955192	937088
		8709			3955192	937088
709170058		670	67944	11597	455225	77700
7091701		13432	58936	11489	7916284	1543202
7091702		7186	1350	12000	440493	86160
		14820			8812002	1707062
709180083		83	89550	28840	74327	23937
		83			74327	23937
709190062		2336	62053	14500	1449558	338720
7091901		1126	2946	13561	70500	15188
709190292		745	1600	13700	38184	10138
		2522			1558242	364046
709200055		5090	22059	13832	1122803	704049
		5090			1122803	704049
709210056		31789	51897	10270	16497537	3264730
		31789			16497537	3264730
709220052		4386	20101	10400	881630	456144
		4386			881630	456144

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DESCRIPTION		REFERENCE NO.	COMP. NO.	WEIGHT	H
ELECTRICS R F		709230059		1368	
				136	
SPARROW ELECTRICS F F		709240152		2541	
SPARROW ELECTRICS C F		709240254		602	
				314	
L P PNEUMATICS		7100000			
12	L P PNEUMATICS F F	710000152		2117	11
12	L P PNEUMATICS C F	710000254		778	37
12	L P PNEUMATICS D B	710000356		418	5
12	L P PNEUMATICS E B	710000458		1557	6
12	L P PNEUMATICS F IN	710000583		504	7
12	L P PNEUMATICS R N	710000651		136	
12	L P PNEUMATICS A P	710000794		602	
				5570	
INTAKE DEICING		712000055		5184	11
				5184	
RADOME ANTI ICING		713000051		888	
				888	
RADIO AND RADAR FIXED		7140000			
	RADIO AND RADAR FIXED R N	714000151		16500	
	RADIO AND RADAR FIXED F F	714000252		5000	1
	RADIO AND RADAR FIXED C F	714000354		18000	2
	RADIO AND RADAR FIXED D B	714000456		1800	5
	RADIO AND RADAR FIXED F IN	714000583		3200	7
	RADIO AND RADAR FIXED C A	7140006		17600	2
				62100	
10	CANOPY ACTUATION	716000052		6205	2
				6205	
CABIN CONSOLES		717000052		1745	1
				1745	
RADAR DOOR ACTUATION		718000054		1000	2
				1000	

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REFERENCE NO.	COMP. NO.	WEIGHT	H. ARM	V. ARM	H. MOMENT	V. MOMENT
7092300	59	136	80200	11360	109072	15450
		136			109072	15450
709240	152	254	18242	11255	46355	28588
709240	254	60	27300	11255	16380	6753
		314			62715	35341
7100000						
710000	152	2117	19378	12463	410232	263842
710000	254	778	32842	10747	255511	83612
710000	356	418	55545	11592	232178	48455
710000	458	1557	65644	9739	1022077	151636
710000	583	504	74257	24452	374255	123238
710000	681	136	6919	10000	9410	13600
710000	794	60	29800	10400	17880	6240
		5570			2321543	690623
7120000	55	5184	19702	11800	1021352	611712
		5184			1021352	611712
7130000	51	888	5149	12500	45723	111000
		888			45723	111000
7140000						
R N	714000	16500	9755	10000	1609575	1650000
F F	714000	5000	18160	12000	908000	600000
C F	714000	18000	27059	10108	4870620	1819440
D B	714000	1800	53000	10000	954000	1800000
F I N	714000	3200	76180	24600	2437760	787200
C A	714000	17600	21329	12364	3753904	2176064
		62100			14533859	7213704
7160000	52	6205	22211	15447	1378193	958486
		6205			1378193	958486
7170000	52	1745	17476	12434	304956	216973
		1745			304956	216973
7180000	54	1000	26800	9500	268000	95000
		1000			268000	95000

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SHEET 5-13

	REFERENCE NO.	COMP. NO.	WEIGHT	H. ARM	V. ARM	H. MOMENT	V. MOMENT
	719000152		363	18744	12200	68041	44286
	719000253		64	20218	15900	12940	10176
	719000354		1400	37197	12455	520758	174370
	719000455		408	22798	12020	93016	49042
	719000556		377	53828	11200	202932	42224
	719000658		443	66701	11200	295485	49616
	719000759		648	80362	13175	520746	85374
	719000862		315	160144	14400	1895137	453744
	719000964		1067	70650	13590	753836	145005
DGE	719001065		319	63948	13526	203994	43148
	719001174		353	79190	13556	279541	47853
R	719001282		566	75523	14260	427460	80712
	719001383		639	74663	20837	477097	133148
	719001484		202	81279	21431	164184	43291
			10000			5915167	1401989

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WEIGHT AND C. OF G BY FUNCTIONAL  
COMPONENT

PROJECT \_\_\_\_\_

DESCRIPTION	REFERENCE NO.	COMP. NO.	WEIGHT	H
REMOVABLE EQUIPMENT GROUP	8000000			
EJECTOR SEATS	801010052		28442	20
			28442	
RADAR REMOV GROUP	8020000			
RADAR REMOVABLE	8020100			
RADIO AND RADAR REM R N	802010151		98050	9
RADIO AND RADAR REM F F	802010252		18900	10
RADIO AND RADAR REM C F	802010354		59600	20
RADIO AND RADAR REM D B	802010456		4150	52
RADIO AND RADAR REM C A	8020106		4350	55
			185050	
SPARROW PACK	8050000			
SPARROW PACK STRUCTURE	805010094		87070	38
			87070	
SPARROW PACK MECHANISMS	805020094		58476	37
			58476	
SPARROW PACK HYDRAULICS	805030094		33194	37
			33194	
SPARROW PACK ELECTRONICS	805040094		14300	33
			14300	
SPARROW PACK ELECTRICS	805050054		6410	36
			6410	

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GROUP	REFERENCE NO.	COMP. NO.	WEIGHT	H. ARM	V. ARM	H. MOMENT	V. MOMENT
0 UP	8000000						
	801010052		284.42	20280	13625	5768038	3875223
			284.42			5768038	3875223
	8020000						
	8020100						
N	802010151		980.50	90.11	101.00	8835286	9903050
F	802010252		189.00	187.14	120.00	3536946	2268000
F	802010354		596.00	269.33	101.47	16052068	6047612
B	802010456		415.00	528.24	100.00	2192196	415000
A	8020106		435.00	555.22	160.00	2415207	696000
			1850.50			33031703	19329662
	8050000						
	805010094		870.70	389.60	96.00	33922472	8358720
			870.70			33922472	8358720
S	805020094		584.76	377.66	98.93	22084046	5785031
			584.76			22084046	5785031
S	805030094		331.94	373.52	99.00	12398623	3286206
			331.94			12398623	3286206
CS	805040094		143.00	332.00	100.00	4747600	1430000
			143.00			4747600	1430000
	805050054		64.10	362.29	95.00	2322279	608950
			64.10			2322279	608950

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WEIGHT AND C. OF G BY FUNCTIONAL COMPONENT

PROJECT \_\_\_\_\_

DESCRIPTION	REFERENCE NO.	COMP. NO.	WEIGHT
OPERATIONAL LOAD	9000000		
CREW MEMBERS	9010000	52	43000
			43000
ENGINE OIL	9020000		
ENGINE OIL DRAINABLE	9020001		92906
ENGINE OIL TRAPPED ENG	9020002		17736
ENGINE OIL TRAPPED D B	9020003	56	19255
ENGINE OIL TRAPPED E B	9020004	58	9095
			13897
SPARROW MISSILES	9030000	54	172800
			172800
OXYGEN CHARGE	9040000		
OXYGEN CHARGE F F	9040001	52	722
OXYGEN CHARGE C F	9040002	54	12672
			1339
ALCOHOL FOR RADOME DEICING	9050000	51	2200
			2200
ENGINE FIRE EXT FLUID	9060000		2500
			2500
RESIDUAL FUEL	9070000		
RESIDUAL FUEL C F	9070001	54	46803
RESIDUAL FUEL I W	9070002	62	171605
			21840
WATER FOR AIR CONDITIONING	9100000	54	26000
UNUSABLE WATER FOR AIRCOND	9100001	54	15002
			27500

WEIGHT AND C. OF G BY FUNCTIONAL GROUP COMPONENT

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REFERENCE NO.	COMP. NO.	WEIGHT	H. ARM	V. ARM	H. MOMENT	V. MOMENT	
9000000							
9010000	52	43000	19400	13650	8342000	5869500	
		43000			8342000	5869500	
9020000							
9020001		9290	65225	11390	6059403	1058131	
9020002		1773	63676	11640	1128975	206377	
9020003	56	1925	58084	9555	1118117	183934	
9020004	58	909	59928	9704	544746	88209	
		13897			6851241	1536651	
9030000	54	172800	38929	8830	67269312	15258240	
		172800			67269312	15258240	
9040000							
9040001	52		7220	4931	14755	9504	
9040002	54	1267	26280	16150	332968	204621	
		1339			347723	214125	
CING	9050000	51	2200	9300	13800	204600	303600
			2200			204600	303600
9060000		2500	73000	12900	1825000	322500	
		2500			1825000	322500	
9070000							
9070001	54	4680	39424	12300	1845043	575640	
9070002	62	17160	59755	13705	10253958	2351778	
		21840			12099001	2927418	
NING COND	9100000	54	26000	26800	13200	6968000	3432000
	9100000	154	1500	26700	12700	400500	190500
		27500			7368500	3622500	

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